



The Official Newsletter of the Gwinnett Amateur Radio Society

March 2022 <http://www.gars.org/> Volume 32, Issue 3



The

GARzette

March 2022 GARS Meeting: Digital Modes Continuation – Bob Hensey K4VBM



The Georgia QSO Party



TechFest

GARS Meeting – Tuesday March 8, 2022 at 7:00 PM

President's Message

From the President...

Congratulations to the re-elected Gwinnett Amateur Radio Society Officers:

President – Joe Biddle (AD4PZ)

Vice President – Jamie Burns (KX4HA)

Treasurer – Pam Meridy (WB1AKQ)

Secretary – Bill Hawkins (WR1TR)

Program – Kevin Scott (K4GTR)

We all are looking forward to serving the GARS Family for another term.



Has spring sprung or what?! I tuned up on-band the other day and a cloud of yellow pollen ignited from the accumulation on my dipole. I'm kidding of course. It would never ignite quite like that - plus we haven't quite gotten to that part of the season as well, but that'd be a really cool site. But it is just around the corner where the 'Yellow Curse of the South' will be upon us.

Repeater News

We have installed a new piece of repeater equipment and it is now online for the main 147.075 repeater. And so far, it has had favorable audio quality reports. We are working on getting full connectivity online as well for the Echolink system. Please be patient with our volunteers as they configure the electronic pieces, create the needed cabling, and test the integrated components that make it all work.

Fundraiser - Dog Show event

Speaking of volunteers, our annual fund-raiser, the Dog Show event, is coming up at the end of this month. If you can give us some of your time to help out, please sign up. More hands make the load lighter. What we do - we direct the show competition attendees to their loading and unloading zones, then subsequently to their designated parking areas, efficiently and safely. Many of these volunteer assignments are seated positions, so fatigue is minimized.

[Dog Show Volunteer Sign-up Sheet – Click here.](#)

GARS Workshop – Where 'Program' turns to 'Operation'

You may have noticed a co-operative forming between our Monthly Programs and our Monthly Workshops. Our goals are to have the GARS Monthly Programs/Topics segue into our hands-on for the

workshops. Here, we take the concept of having a monthly meeting topic, and expand it by putting the topic into practice with hands-on implementation. For example, attend the program presentation on "Digital Modes for Amateur Radio", then come to the Workshop ready to get your own equipment expertly configured that will get you on the air communicating in the digital world. But remember too, that the workshop is for YOU. This is where you can attend and ask or discuss any challenges you may have with your own equipment.

Silent Keys

It is always sad to lose a Family member, and a GARS Family member is no different. This year so far, we have lost two valued members: Thomas Whalen, KE4UXW and Phil McCleary, N4LNE. Please keep them and their families in your thoughts and prayer. Read about Phil later in this newsletter issue.

Also, please see our [GARS Silent Key Memorial Web Page - Click here.](#)

TechFest

And finally, some great news! TechFest will be back on January, 14, 2023.

As long as Covid and any of its ugly kin stays away, we will have a grand TechFest bigger and better than ever. We have solved our facility challenges by securing the main building (Exhibit Hall) at the Gwinnett County Fairgrounds. Yes, that's right, the building we've visited time and time again for the local Ham Fest, will now also host our annual GARS TechFest extravaganza. With over 20,000 interior square feet, we will have plenty of room for all exhibits, food areas, testing, and lectures to be given. Start thinking now of any displays or demonstrations you could share with your fellow Hams at the **GARS TechFest in 2023.**

73,

Joe Biddle, AD4PZ

Club President

GARS Meetings & Workshops

GARS Meetings and Workshops

GARS Meetings and Workshops are held in-person at the EAA 690 Hangar. Zoom simulcast of Meeting & Workshop information will be listed on <http://www.gars.org>.

Meetings and Workshops are OPEN to all, feel free to share your invite with others.

Zoom login info will be posted to <http://www.gars.org> prior to the meeting.

When events are available on Zoom

- Workshops and Meetings will be **recorded**. By participating you consent to being **recorded**.
- Please change your display name to Your **FirstName Call Sign**, e.g. Hiram W1AW
- [How to change Your Display Name in Zoom](#)
- Please stay muted until ready to speak. Your space bar works like a PTT for un-muting
- To be fair to everyone, there will be a three minute limit for each person during Q & A
- You may ask questions in chat; **please stay on topic while using chat.**

GARS Meetings Schedule (second Tuesday @ 7:00 PM): (these are the presentations)

- March 8, 2022 – Digital Modes for Amateur Radio (Part-2) – Bob Hensey K4VBM
- April 12, 2022 – DMR – Bob Hoffmann K4CQO
- May 10, 2022 – Re-capping and tube testing to bring radios back to life – Don Woodward KD4APP
- June 14, 2022 – Preps for GARS Field Day
- July 12, 2022 – How to build a 4-element, 2m, Cubical Quad Antenna – Dallas N4DDM
- August 9, 2022 – Winlink email via Amateur Radio – Mark Bell N7GRB

Workshop Schedule (third Tuesday @ 7:00 PM): (these are the Hand-on Workshops)

- March 15, 2022 - Digital Modes for Amateur Radio (Part-2) - Bob Hensey K4VBM
- April 19, 2022 - DMR - Bob Hoffmann K4CQO
- May 17, 2022 - Re-capping and tube testing to bring radios back to life - Don Woodward KD4APP
- June 21, 2022 - Final Preps for GARS Field Day
- July 19, 2022 - How to build a 4-element, 2m, Cubical Quad Antenna - Dallas N4DDM
- August - November - **Guest Speakers Needed**

GARS Meeting – March 8, 2022



Digital Modes for Amateur Radio

Bob Hensey K4VBM

This will be Part 2 of Bob's Digital Modes for Amateur Radio presentation given last month. Bob will continue his in-depth introduction to weak signal digital modes. These weak signal modes allow modest stations to make worldwide contacts. Think of this as your Digital Appetizer because there is just too much to properly cover in the time allowed at one meeting.

Here is an outline of Bob's presentation:

- Some background stuff
- Digital Modes set-up Tips
- Good Operating Practices
- Tricks when using Digital Modes
- My favorite Digital Modes
- Remote Digital Operation overview

GARS Workshop – March 15, 2022



Digital Modes for Amateur Radio

Bob Hensey [K4VBM](#)

This will be the Part-2 Hands-On Workshop. Bring your laptop, rig, etc so you can get help configuring your digital station. The plan is to do live digital contacts either with an antenna in the parking lot or by remote login to Bob's station at home. A minor focus will be on Digital Chat Modes. **This will be an in-person Workshop.**



The

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GARS Communication

2 Meter Repeaters

147.075(+) MHz Tone 82.5
147.255(+) MHz Tone 107.2

1.25 Meter Repeater

224.580(-) MHz Tone 100.0,
1.6 MHz Offset

70 Cm Repeaters

444.525(+) MHz Tone 82.5
442.100(+) MHz Tone 100
442.325(+) MHz Tone 100

6 Meter Repeater

53.110 (-1 MHz) No Tone
(Offline for Maintenance)

Other Resources:

APRS

144.390 -- 1200 Baud
W4GR

D-STAR

WD4STR
145.060 + (1.4 MHz)
440.550 + (5 MHz)

**Don't forget
to support our
advertisers at the
back of the
GARzette.**

Snail Mail Address:

GARS
P.O. Box 492531
Lawrenceville, GA 30049

Notable Web Links

Ham Radio Glossary: <https://noji.com/hamradio/glossary.php> a very comprehensive listing provided by Noji Ratzlaff KNØJL. On his site there is also a lot of information about getting started in ham radio.

Need Help – Let GARS Elmers answer your questions

Send an email to elmers@gars.org with the subject listing the area (like Antennas, Repeaters, Digital, DMR etc.) of your query to get to GARS Elmer volunteers.

The *GARzette* is the official monthly newsletter of the Gwinnett Amateur Radio Society, serving its members and other persons interested in the advancement of the Amateur Radio art.

Original articles, art, and photos are invited and encouraged. Previously copyrighted submissions cannot be accepted for reprinting unless permission from the appropriate publisher is provided in writing along with the information being submitted. If reprints are from publications allowing their unrestricted use, please include a copy of the printed permission contained in the publication.

If possible, bring your articles to the monthly meeting in Microsoft Word or rich text (.rtf) or text or HTML format or by e-mail to editor@gars.org. Artwork can be accepted in most any graphics format and can be submitted via e-mail to the same address. Alternate means of submittal can be arranged when necessary.

In keeping with the Amateur Radio spirit, permission is hereby granted for the reproduction of The *GARzette* articles by other Amateur Radio club newsletters provided that proper credit is given to the individual author and *The GARzette*.

The GARzette is published each month with the assistance of Karen KI4HPP and Kyle W4KDA who print copies for distribution at meetings, etc. and Dave Bruse, W4DTR, who distributes the newsletter electronically.

Deadline for submissions is the 28th of each month for inclusion in the following month's issue.

For additional information view our Website at: <http://www.gars.org>

Newsletter Email: editor@gars.org Editor: Bob Hoffmann, K4CQO Assistant Editor: Bill Eggers, WB2RIS



GARS.org

GARS HELP WANTED

Speakers Needed for GARS Workshop Presentations, 3rd Tuesday of the month – Email workshop@gars.org to volunteer. [PS— Articles to publish in the *GARzette*, either written by GARS members or published elsewhere, are always welcome. —Ed.]

GARS Happenings

20 Years ago in the March 2002 GARzette:

- Ike Chapman, K4WEC started his reign as GARS President
- Sharon Carter, KG4HGO is going to start the Richards Middle School Amateur Radio Club as part of her new job there
- There was talk of restarting a "Rookie Radio" committee to help new hams get started
- Bill Carter, KG4FXG provided an article about his CW adventures

You can always browse the GARzette archive at <http://www.gars.org/newsletters> and go directly to the 2002 GARzette by clicking on the image. 73, Bob, K4CQO, GARzette Editor



[Health and Wellbeing](#) – Sandy Jackson, KJ4DRO

Look for this resource on [gars.org](http://www.gars.org) and use it as a means to convey information about a GARS family member or Silent Key notification.

Net Managers Corner

Monday Night 2 Meter "Want, Swap, Sell, and Information Net"

GARS NEEDS MEMBERS TO SERVE AS NET CONTROL STATIONS!

GARS is a great Amateur Radio service club with the membership and awards to prove it. Our club is very busy and active, and we use the Monday night net to get timely information out to our members. Weekly participation is needed to make our net function well. There is only a small group of very dedicated people who make the net happen each week, and we need more members to volunteer to serve as Net Control Stations (NCS) on a rotating basis.

Out of almost 300 members, there are only seven operators who serve as the NCS for the GARS net every Monday night. In no particular order, they are:

Don – KW4AL

Ray – N4GYN

Bill – WG9NUW

David – KA4KKF

Glen – W3WWT

Russell – AB4QQ

Chuck – KK4TKJ

Charlie – WS4TOT

As GARS Net Manager (Chuck KK4TKJ), I would like to have more volunteers to fill NCS positions. I do plan and post the schedule months in advance. Any conditions will be accommodated that you as a rotating NCS need to place on the scheduling of your duties. If your plans change, I can make adjustments for the schedule to work, and I will make those changes happen as soon as I am notified of a problem. As Net Manager, I also send out reminders each week to let the NCS scheduled know he or she is NCS for the next Monday night net. In short, serving as a rotating NCS is a small duty but a great contribution to the club. The "Want, Swap, Sell Information Net" begins promptly at 19:30 every Monday night and runs about 30 minutes. As a scheduled NCS, you will request the assistance of a volunteer alternate NCS each time you have Net Control. Your simple duties will be to tune in to the GARS repeater, read the script, take a few notes and forward the information to me for record keeping.

Please lend a hand and contact me (Chuck) at KK4TKJ@arll.net. Sign up to help support the effort that makes GARS the great club that it is. 73 and see you on the Nets!

Upcoming HamCrams

GARS HamCram Technician License Classes

*Saturday, March 26, and Sunday, March 27
This is the entry-level license session*

For more information on the test session, [click here](#) to email the instructors.

STUDY GUIDE: We will be using the hamradioschool.com material.

CLASS: 8:00am to 4:00pm Saturday and 8:00am to 3:00pm Sunday

Thirty Minute Lunch Break with lunch brought in, both lunches and test for \$25.00

EAA hangar Briscoe Field Lawrenceville, GA near the intersection of highway 316 and Hi-Hope Road

[Click here for directions](#)

EXAM SESSION: 3:00pm to 5:00pm Sunday

This exam session is a closed session only available to those students who sign up for the class.

REGISTRATION:

*** Pre-registration is Required ***

*** See registration in the sidebar ***

*** There is a no refund policy for no shows ***



LARC (Lanier Amateur Radio Club) 2022 Ham Cram and Swap Shop

GAINESVILLE MIDDLE SCHOOL
1581 Community Way Gainesville, GA 30501
APRIL 16, 2022 FROM 8:00 AM TO 3:00 PM

Join Lanierland ARC and Gainesville Middle School ARC for the 2022 annual Ham Cram and Swap Shop. There will be food, fellowship, and a raffle benefiting the Gainesville Middle School ARC program!

HAM CRAM AND TESTING Sign up for the Ham Cram [here](#). **Time to start Class: TBA**

Testing is available for walk-ins between 9:00 AM and 11:00 AM or 1:00 PM and 2:00 PM. All test takers must have hard copies of your picture ID. If upgrading a current official amateur license is required. FCC Registration Number AKA FRN is required to take the test and can be found [Here](#). Cost to test is \$10.00 CASH. Take 1, 2, or 3 test's in one day and pay one price. Tips if you wish to get a head start on studying you can start [Here](#) for the **Technician** and [Here](#) for the **General**. These answers will also be reinforced at the Cram. **Amateur Extra** Test will be available but not be a part of the Cram Sessions.

Lunch will be available at an additional cost. **If there are any questions please email activities@lanierlandARC.org or call Billy Fallin at 770-771-3773**



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LARC Swap Shop

Sign up for the Swap Shop [Here!](#)

Do you have a radio, generator, tower, or any other gear that needs a new home? Join us for the 2022 Lanierland ARC and Gainesville Middle School ARC Swap Shop. We are providing a FREE platform to buy, sell, or swap equipment. All we ask is that you pop your trunk, maybe bring a 6 ft table, and a pocket full of cash to buy, or make change to sell.

There is also a 50/50 raffle benefiting the Gainesville Middle School ARC. Your contribution will allow Gainesville Middle School ARC to fund projects and further the Art and Science of Radio.

Tickets are

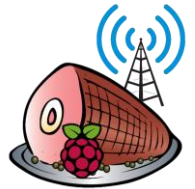
- \$1.00 ea
- 6 for \$5.00
- 15 for \$10.00
- 35 for \$20.00
- 90 for \$50.00
- 200 for \$100.00

HamPi Recognition



On March 1, 2022, [HamPi](#) was recognized with two awards from [SourceForge](#), a premier open-source web service that offers software consumers a centralized online location to create and manage open-source projects. The first award was the *Community Choice* award, and the second is the *SourceForge Favorite* award.

These honors are awarded only to select projects that have reached significant milestones in terms of downloads and user engagement from the SourceForge community.



This is a big achievement, as the HamPi project has qualified for these awards out of over 500,000 open source projects on SourceForge. SourceForge sees nearly 30 million users per month looking for, and developing, open source software. HamPi now has the privilege of displaying the SourceForge award badges alongside the HamPi logo.

The creator / curator of HamPi, [Dave Slotter, W3DJS](#), says, "I would like to thank the individuals in the Atlanta Ham Community, as well as the larger international [HamPi User Community](#) for all their support. Without their support, HamPi would not exist."

ARRL International DX Contest

It's that time of year for the phone ARRL International DX Contest.

For those who want/need to work DX on phone, this is a great contest. It's up there with CQWW DX. In my experience, most participating DX stations are QRO with nice, big antennas, so your 100w and a wire will be just fine.

Technicians! 10m has been very active recently - I just worked Scotland on SSB this past weekend during a nice opening with 100w and a dipole in the attic. With improved solar flux indices, the higher HF bands are becoming very active.

The contest begins this Friday night at 7:00PM EST until 6:59PM on Sunday. The exchange is very simple with a signal report and state abbreviation. See link for details - <http://www.arrl.org/arrl-dx>

73 and good DX, Alex, AK4AM

WSB Radio 100th Anniversary

100th Anniversary Commemorative Special Event Station

Radio station WSB in Atlanta is celebrating its 100th anniversary March 15, 2022. It is the oldest broadcast station in the Southeast, and one of the oldest stations in the United States. Atlanta area Hams, with the support of The Atlanta Radio Club W4DOC, will be commemorating this anniversary by conducting a special operating event starting 0500 UTC 3/12/2022 and ending 0500 UTC 3/21/2022.



The main event will be Tuesday 3/15/2022 when we will be operating from both WSB offices in Atlanta and the historic transmitter site in Tucker, GA.

When it went on the air for the first time at a power of 100 watts. The station was originally owned by The Atlanta Journal and broadcast from a makeshift studio on the fifth floor of The Journal building on Forsyth Street in downtown Atlanta. In 1925 the station moved to more spacious quarters on the top floor of the Biltmore Hotel, where it remained for the next thirty years. In 1955, WSB-TV and WSB Radio moved into the building that housed the operations for the next 43 years. The new structure became known as "White Columns" and was a magnificent blend of history and emerging technology.

Hailed as the "Voice of the South," WSB Radio was an innovative pioneer in radio. With its many breakthrough practices, from being the first radio station to use a slogan to broadcasting a Spanish translation of "Voice of America" programs to Cuba during the Cuban Missile Crisis, WSB always remained cutting edge and more importantly, relevant. Its presence continues to be felt in the city of Atlanta, throughout the nation, and worldwide. The station now resides in Midtown at 1601 Peachtree St.

Amateurs using the callsign W5B will make two-way contact with other amateurs across selected bands on SSB, AM, CW, and digital modes. A special QSL card will be sent to anyone who contacts one or more of the special event stations and sends a card accompanied by a self-addressed, stamped envelope. The card will feature historical photos of WSB over the years as well as a special 100th Anniversary WSB logo. A historical sheet will also be available for download.

Event information will be updated and available as plans are completed by going to www.atlantaradioclub.org/wsb-100-event.

For more info, please contact wsb100@atlantaradioclub.org

Memorial Tribute to Phil McCleary

Phil McCleary, N4LNE, Silent Key, Feb 3, 1956 - Feb 5, 2022

Phil and I met at a GARS meeting, approximately 10 years ago. I saw him sitting by himself and decided to strike up a conversation with him and get acquainted. The more I talked with him, the more I realized how much we had in common and that I would like him as a true friend. Here are some of the things we had in common:

Music. He loved Irish Country music. I also liked Irish Country Music. Phil especially liked to discover new Irish singers on YouTube. He especially like the music of Owen Mac. Owen Mac has recorded videos from his childhood to adulthood. It was very interesting to watch him gain confidence as he matured. Here is a sample of his earliest videos:

<https://www.youtube.com/watch?v=OIEIXlfcOs>

Flying. He had the opportunity to fly a Piper Cub with a friend and fell in love with flying. I also flew several Piper airplanes as a private pilot. Phil was an aviation enthusiast! We loved to watch air crash/disasters reviews on YouTube. There was always something to be learned. Phil knew more about large airplanes than I ever did. He spent a lot of time learning about each type of airplane from a single engine Cessna 172 to the Boeing 757 on his simulator. He impressed me to no end with his knowledge of all the complexities of the large airliner planes.

Ham Radio. We both enjoyed being a Net Control Station (NCS) on the "Rag Chewers Net" and finally on "The Chit Chat Net" on 7.180 MHz on Tuesday and Friday at 11:30 am ET. I had also been an NCS on MMSN, the Maritime Mobile Service Net. That first time I met Phil he told me he recognized my voice because he had listened to that net way back in the 90's. He enjoyed ALL aspects of the hobby, and there are so very many. He gave me my first DMR digital hand held radio and taught me how to set it up. He also helped me setup a D-Star digital radio. He owned the Icom ID-5100 Dual Band VHF/UHF transceiver, and influenced me to buy the same radio. Phil and I swapped radio equipment a lot. He was generous to a fault.

Computer repair and support. He was the most knowledgeable person at the Bartow County, FL Police Dispatch Center and set up and maintained their computers from the days of DOS and Linux to Microsoft Windows Server. We had a lot of fun putting both of our Ham Radio stations on Remote Hams for others less fortunate to use. You can do the same, for FREE, at <https://remotehams.com>. It's a lot more fun with a good friend and we met a lot of new friends via Remote Hams.

He Enjoyed Seafood, especially at Coastal Breeze Restaurant on Lanier Islands Pkwy in Buford, GA. That was our favorite place to eat. We introduced many friends to that place, friends from out of state whom we had met on The Chit Chat Net.

He rode up to Dickson, TN with me to see my brother David, KF4ZPN and stayed several days. David and he became good friends instantly.

He was my best friend! Phil was a good listener; a thoughtful and caring person. He had a great sense of humor and put up with my silly jokes and had the most infectious laugh. And he could always make me laugh. He could read faster than anyone I have ever met. He could listen to a digital book at lightning speeds and never miss anything. He seemed to be able to remember everything he ever saw or heard. What a wonder guy!! He will be missed as long as I live.

Affectionately,
S. Ray Bailey
N4GYN
<https://n4gyn-ray.com/>



L to R: Ray N4GYN, Jim W4NTA, Phil N4LNE February 2020

GARS ARRL School Club Roundup

McConnell Amateur Radio Club – KD4TGR

ARRL School Club Roundup
Nationwide Competition February, 2022



Goals of the Competition

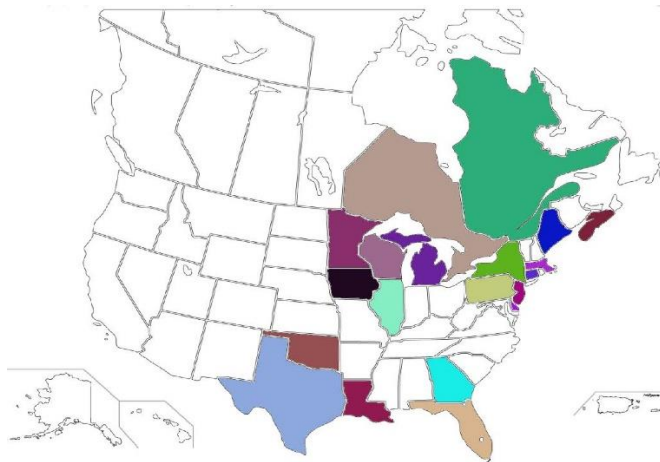
- To contact and exchange information with individuals, radio clubs, and especially other school clubs
- To promote and experience good practices for on-air contacts in Amateur Radio

Every radio club member who participated was able to make contacts and help to log the information for each other.

Our signal reached far and wide!

During 8 hours on the air, our club members talked with stations in ...

- 17 States
- 3 Canadian Provinces
- France



Congratulations to KD4TGR radio club for more than 4000 points (5 times their previous score)!



Provided in cooperation with Jean Delashmit and Ralph Pickwick KJ4CNC.

Heathkit SB Series Linear Amplifiers

Vintage Amateur Radio Heathkit Linear Amplifiers

de Bill Shadid, W9MXQ



Here we go into the third and final article on Heathkit Linear Amplifiers. As I believe I mentioned before, there were eleven linear amplifiers that Heathkit offered, or were prototyped in enough volume to have some in the field. Before the nine models we have talked in the past two months, there were two other models. The first, the KL-1 Chippewa, even had a model option to operate in Class C – which is non-linear. The second was the HA-10 Warrior Linear Amplifier – which was as economical as the KL-1 was expensive.

Please see the pictures, below of these two, now classic, Linear Amplifiers . . .

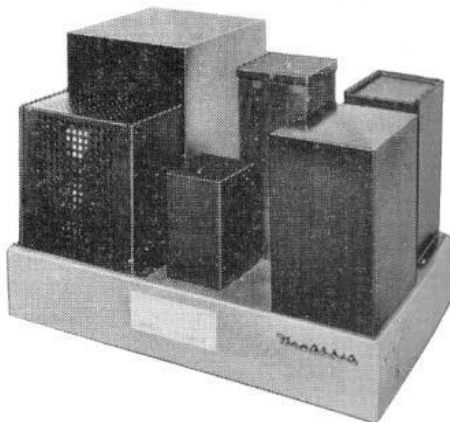


**Heathkit KL-1 Chippewa
Linear Amplifier**
Heathkit Photo



**Heathkit HA-1 Warrior
Linear Amplifier**
W9MXQ Photo

In addition, it should be noted that the KL-1 Chippewa had a second chassis that included the KS-1 Power Supply for all amplifier functions. The HA-10 Warrior was self-contained.



Heathkit Photo

The Heathkit KS-1 AC Power Supply for the KL-1 Chippewa Linear Amplifier. At 105 pounds, this was a monster but duly supported the power requirements of the amplifier in Class AB1 and Class C operation. The KS-1 Power Supply had a slightly smaller footprint compared to the KL-1 Amplifier and was designed to be placed separately.

The KL-1 Chippewa Linear Amplifier was introduced to very positive reviews in 1960. It was an incredible piece of hardware at 70 pounds, not including the 105 pound weight of the matching, and required, KS-1 AC Power Supply. The KS-1 was on a similar sized chassis to the KL-1 Amplifier but it lacked the outer cabinet. The components on the chassis of the power supply came out to be about a

half-inch taller than the fully enclosed amplifier.

In the late 1950's, Heathkit was coming off many years supporting the ham radio community with the successful DX-series Transmitters. The DX-100¹ and DX-100B¹ transmitters led to the popular TX-1¹ Apache Transmitter. The DX-100 series and the Apache formed the deluxe Heathkit AM/CW line of amateur transmitters of the 1950's. However, Heathkit's marketing planners could see the coming of the popularity of SSB in amateur operation. To stay competitive with customers wanting SSB capability, Heathkit began to develop SSB related products and in 1958 introduced the RX-1¹ Mohawk HF SSB/AM/CW Receiver. The Mohawk was the first of the "Green Machines," in reference to their green on green color scheme. For a short time, the DX-100B Transmitter, along with the Mohawk Receiver formed the basis for Heathkits premier station. Also in 1958, to keep up with others in the field - or perhaps to lead them – Heathkit introduced the SB-10¹ Single Sideband Adapter that allowed a properly modified DX-100 or DX-100B to run SSB as well as their traditional CW and Plate Modulated AM. Introduction of the much refined TX-1 Apache provided for plug-n-play connection to the SB-10 Adapter. But, the TX-1 Apache was still basically an AM/CW Transmitter.) In 1960, Heathkit moved further in the SSB market with the introduction of the KS-1 Linear Amplifier. Below is a picture of a top of the line, Heathkit SSB/AM/CW station from the early 1960's.



**SB-10 Adapter, TX-1 Apache Transmitter, RX-1 Mohawk Receiver,
KL-1 Chippewa Linear Amplifier, and AK-5 Speaker (L to R)**

(The KS-1 Power Supply for the Chippewa is mounted elsewhere)

**(Shown also are the much later Heathkit HA-1410 Keyer, an Electro-Voice 911 Microphone,
and a Vibroplex Original "Bug" Keyer)**

Heathkit Station at W8SA

I don't want to get too far ahead of myself here, but this was an interesting time as ham radio had many users of AM as well as a growing number of proponents of SSB. At the time, Barker & Williamson (B&W) offered the B&W 5100¹ and 5100B¹ AM/CW Transmitters that could utilize their 51-SB¹ and 51-SB-B¹ SSB Adapters. And, E. F. Johnson offered their Viking Valiant¹, Viking Valiant II¹, and Viking 500¹ AM/CW Transmitters as well as a Viking Single Sideband Adapter¹. The SB-10, 51-SB, and 51-SB-B Adapters were easily adapted by ham operators of the day to existing transmitters of the time. The user had to develop an insertion point in the signal path and provide necessary modifications to the final amplifier to allow class AB1 operation for SSB use.

Specifications for the KL-1 Chippewa Linear Amplifier were impressive. In my opinion, the only other popular and competitive amplifiers of the time were the Collins 30S-1 (covered in an earlier article) and the E. F. Johnson Viking Thunderbolt¹ amplifiers. However, only the Chippewa offered both Class AB1 and Class C operation. The duty cycle and power of these three amplifier products were not equaled in too many cases at the time.

The RF Drive plus Final Amplifier Input and Output Levels are as shown here:

RF Drive Power Required	
Class AB1 (Tuned Grid)	10 Watts Peak
Class C (Tuned Grid)	40 Watts Peak
Class AB1 (Swamped Grid)	60 Watts Peak

Final Amplifier Power Input	
Class AB1 (SSB Voice Modulation)	2,000 Watts PEP
Class AB1 (SSB Two-Tone Test)	1,300 Watts
Class AB1 (AM Linear)	1,000 Watts
Class C (CW)	1,000 Watts

Final Amplifier Power Output	
Class AB1 (SSB Voice Modulation)	900 Watts PEP
Class AB1 (SSB Two-Tone Test)	550 Watts
Class AB1 (AM Linear)	300 Watts (Carrier)
Class C (CW)	750 Watts

Source: Heathkit KL-1 Operating Manual

The KL-1 Chippewa accomplishes its task with a pair of 4-400 Tetrodes – a popular Tetrode tube of the time for both amateur and broadcast use. The tube provided for 400 watts of plate dissipation (800 total) for more than adequate operation in the duty cycle demanded. Class AB1 operation netted 50-60% efficiency and Class C commonly attained 75% efficiency.

It must be remembered that in the world of RF power in the 1950's there was some "discussion" going on as to legal power levels on SSB. This amplifier would seem to be more than capable of running 1,500 watts output, as we are allowed today – and in fact, the power supply is rated to that end.

The 4-400 final amplifier tubes were cooled in somewhat different fashion from the norm at the time. The cabinet chamber below the tube sockets was pressurized by a squirrel cage blower. That blower forced air through the sockets holding the tubes. Unlike most other manufacturers using these tubes, there was no chimney around the tube, so the air simply blew through the sockets around the tube base. Holes in the outer cabinet allowed for the air to move inside the cabinet and thus move air along the tube envelope. In the end, this system seemed to work well, and the Chippewa is well known as a dependable product. The critical cooling issue with these tubes was to keep the vacuum seal area cool. That seal is located at the very bottom of the envelope – an area in the direct path of the cooling air.

Like many power tubes, the 4-400 Tetrode takes about 60-seconds to warm up to proper operating temperature. This wait was accomplished by an internal timer that would only allow high voltage to become available after a delay of 60-seconds from the time the main power switch was engaged.

The KL-1 Chippewa included several other tubes. In a tube amplifier today these functions would be handled by solid-state devices. It had a 6DQ6 Clamp Tube plus six Regulator Tubes (four OD3's and two OC3's). The Clamp tube was for proper cut-off at key-up when running in CW. The separate KS-1 Power Supply had two 866A Mercury Vapor Rectifier Tubes.

Cost of the KL-1 Chippewa Linear Amplifier, in 1960 was \$399.95. The necessary KS-1 Power Supply was an additional \$169.95. That totaled \$569.90. A lot of money in 1960. That was a problem and sales were low while the amplifier drew very good reviews from its users. Heathkit saw the error of their marketing target and discontinued the product in the same year it was introduced – 1960. These amplifiers are very rare today and the only one I have recently seen for sale is posted for a total price (KL-1 and KS-1) of \$1,799.99. That is over three times its original selling price. It is the only one I have

ever seen for sale. Very few were made. As you will see in later installments, this is not the only time Heathkit over designed a product for their intended market.

Only a year later, in 1961, Heathkit recovered from the marketing error with an amplifier that is the second one in this article. This was the popular Heathkit HA-10 Warrior Linear Amplifier. The amplifier cabinet was nearly identical in size to the KL-1 Chippewa but was self-contained in that one cabinet. The HA-10 Warrior was every bit as simple as the KL-1 Chippewa was complex. The Warrior was on the market for the rest of the time Heathkit made the likes of the TX-1 Apache Transmitter, the RX-1 Mohawk Receiver, and the soon to arrive HX-10¹ Marauder SSB/AM/CW Transmitter.

The HA-10 Warrior used a much lower cost 811A Triode. The 811A is still in production and installed in new amplifiers, today. Four of them run in a Grounded-Grid, Class AB1 design in the Mohawk. Unlike in 1961, the tubes today are made in either China or Russia and no longer carry such names as RCA, Cetron, or General Electric.

Using the same format as shown with the KL-1 Chippewa Linear Amplifier, here are the operating input and output power levels of the HA-10 Linear Amplifier:

RF Drive Power Required	
Class AB1 (SSB/AM/CW)	100 Watts Peak

Final Amplifier Power Input	
Class AB1 (SSB Voice Modulation)	1,000 Watts PEP
Class AB1 (AM Linear)	400 Watts (Carrier)
Class C (CW)	1,000 Watts

Final Amplifier Power Output	
Class AB1 (SSB Voice Modulation)	500 to 600 Watts PEP
Class AB1 (AM Linear)	200 Watts (Carrier)
Class C (CW)	500 to 600 Watts

Source: Heathkit HA-10 Operating Manual (By Calculation of Values Shown)

In addition to the 811A Triodes operating in the power amplifier, the HA-10 Warrior had two 866A Mercury Vapor Rectifiers in its power supply. The amplifier is quite heavy at 92 pounds. That is far lighter than KL-1/KS-1 Chippewa combined weight of 175 pounds.

The 811A tube requires no perceptible warm-up. In fact, it was designed for applications where the filament power was controlled by the PTT button on the microphone. That pretty well defines "short warm-up!"

Several HA-10 Warrior Linear Amplifiers are in the hands of friends of mine - running in regular service in their ham stations. One oddity is that their primary transformer is 120VAC only.

Both the KL-1 and HA-10 work well with today's 50-ohm exciters. It may be necessary in some instances, however, to use some sort of input matching with modern radios.

Are you looking for the big iron Heathkits? Here is a table of when they were made and what models went together in what year. I find it interesting that the HX-10 and HA-10, Marauder and Warrior, respectively, went on for a year without their matching RX-1 Receiver. By then the main line Heathkit SSB/AM/CW Receiver was the excellent SB-300. The SB-300 was covered in a past installment of these articles. As will be covered later, the RX-1 Mohawk was costly to manufacture so Heathkit may have been only too happy to move it aside when the SB-300 became available. In no way is that any



The

indication that the Mohawk was anything but a fine receiver – but it did suffer from fast moving receiver technology of the time.

Year	RX-1 Mohawk Receiver	TX-1 Apache Transmitter	HX-10 Marauder Transmitter	KL-1 Chippewa Amplifier	HA-10 Warrior Amplifier	SB-10 SSB Adapter
1958	X	X				
1959	X	X				X
1960	X	X		X		X
1961	X	X	X		X	X
1962	X	X	X		X	X
1963	X	X	X		X	X
1964	X	X	X		X	X
1965			X		X	

A special thanks go to Bob, W9DYQ, for his proof reading. I appreciate that you read my articles. Remember that I am open to questions and comments at my email address, W9MXQ@TWC.com.

W9MXQ

Notes and References:

¹ Subjects of a future articles.

Some statistical information comes from the book, by Chuck Penson, WA7ZZE, "Heathkit, A Guide to Amateur Radio Products" Electric Radio Press, © 1995. Contact Chuck at WA7ZZE@gmail.com for purchase options on this and other books he has authored.

The entire article is available on-line, see

http://www.gars.org/newsletters/2022_03_GARZETTE.pdf



The

GARS Membership

New Members List in February

New Members: 0

**Total Members as of
March 1, 2022
349**

Join GARS members for our weekly breakfast
gathering at
7:30 AM most Saturdays
Now at
Cracker Barrel Restaurant
75 Celebration Dr.
Suwanee, GA 30024

Birthdays in March

Bobby Anderson (KO4UOY)
Deidra Atkin
Rick Baker (KO4RWY)
Chris Beals (KO4QBC)
Ryan Bibby (KN4RQL)
John Bojack (N0HRM)
Dave Bruse (W4DTR)
Martin Goff (KK4EBS)
Jim Hawkins (KF4RX)
Skip Kazmarek (K4EAK)
Robert Lopez (KN4NSP)
Mary Marlowe
Daniel Riegel (KO4USQ)
Kyle Scott (KN4UWV)
Madai Similao
Mike Smith (KK4KHS)
Tom Tcimpidis (K6TGT)
Joel Thomas (KK4OFE)
Brent Woodman (N2BAB)
Ed Woodrick (WA4YIH)

GARS MEMBERSHIP

Your current GARS membership status is shown in the monthly newsletter e-mail towards the bottom of the message. To become a GARS member, or to renew your GARS membership, please visit our website—<http://www.gars.org>. To make changes to your GARS membership (moved, new e-mail address, new phone number, etc.), please e-mail the Membership Committee - membership@gars.org. You can renew or update your Amateur Radio license information with the FCC at their website for free <http://wireless.fcc.gov/uls/index.htm?job=home>. To update your ARRL information, please visit their website - <http://www.arrl.org>. Membership Chair: Karen Albritton, KI4HPP Committee Members: Dave Bruse, W4DTR

Repeater Status

6M	Currently down
147.075	Operational in Snellville
147.255	Operational in Snellville
224.580	Operational in Grayson
442.100	Operational at Goshen Springs
442.325	Operational in Buford
444.525	Operational in Snellville

Link remote receivers being added

Donating to GARS

Your GARS donation can be used for a certain purpose by donating to one of these funds:

- GARS SK Memorial Fund for Education (to remember and honor Silent Keys);
- GARS Scholarship Fund (Administered by the ARRL for awarding scholarships);
- GARS General Fund (any club purpose).

GARS has joined these rewards programs (a portion of every purchase you make through these merchants may be donated to GARS):

- Amazon Smiles;
- Kroger Community Rewards program.

For more information on how to sign up for these rewards programs, or to donate to GARS, visit

<http://gars.org/gars/donations-to-the-club>

GARS on Social Media



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Groups.io:

<http://gars.org/groups.io>



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The

GARS Meeting Minutes

Gwinnett Amateur Radio Society – GENERAL MEETING MINUTES

2/8/2022

In person and online meeting.

President Joe Biddle (AD4PZ) opened the meeting at 7:00pm and closed the meeting at approximately 9:15 pm

Joe (AD4PZ) recognized SK Philip McCleary (N4LNE) 1956-2022 - Ray N4GYN presented a brief eulogy for his friend. A moment of silence was observed.

Participants: 38 in person – 39 reported online

New hams, visitors, and upgrades: Joe (AD4PZ)

- New hams and visitors introduced
- License upgrades recognized

Treasurer's Report: Pam (WB1AKQ)

Membership: Karen (KI4HPP)

- 354 members

VE Team: Joe (AD4PZ)

- Exam session this coming weekend.

Programs: Kevin (K4GTR)

- March - recapping and testing a rig
- April - What is DMR

Workshop: Dallas (N4DDN) Current workshops will mirror the meetings.

- Digital modes next week - live
- March - Workshop for recapping and tube testing
- April - Hands on workshop for DMR

Other Business:

- Joe Recognized Mark N7GRB and Larry Whited AB4NX for their appointments to ARRL - Mark N7GRB spoke for a few minutes with details.
- Winter Field Day report – Dave (KA4KKF) said he had fun.

Announcements:

- Billy (KN4ZFB) announced that LARC POTA Day will be held May 7 under the call sign W4P at DON CARTER STATE PARK, 5000 N BROWING BRIDGE RD, GAINESVILLE GA - EMAIL KN4ZFB@GMAIL.COM FOR QUESTIONS. Link on the LARC Facebook page.
- Dave (W4DJS) announced that the GA state DMR net group 3113 will meet Wednesdays at 8 pm
- David KA4KKF reminded us that volunteers are needed for dog show at end of March. Sign up on the GARS site.
- June 17 Joel (WA4HNL) says Solder Camp at Hangar needs volunteers to teach soldering and ham radio.

Officer Elections:

- Earl AF4FG announced the officer slate from nominating committee.
- Motion made to accept slate.
- Motion approved and seconded.
- Vote by acclamation.
- Previous officers elected for another year.

Program: Bob (K4VBM) spoke on digital modes for amateur radio.

Minutes by Bill Hawkins (WR1TR) Club Secretary.

Workshop Minutes - February 15, 2021

Number in Attendance: 10

Workshop Topic: Digital Modes for Amateur Radio

Presenter: Bob Hensey K4VBM

Brief Summary: Bob made the rounds assisting those that brought laptops and Jump Kits. Those that didn't bring gear huddled around to watch, learn, and contribute. Detail notes were taken on how to install and configure Meinberg, a Network Time Protocol application, and K9DUR's UTCclock. Meinberg synchronizes your PC clock to a time server so your rig transmits in the right time slot. UTCclock displays a small UTC clock on your PC. Notes on how to install and configure them are posted on the Previous Presentations for the 2022-02-15 Workshop.



The

Events – GARS and others

ARRL CONTESTING INFO

From ARRL Contest Calendar
> For more information click the links <

March 2022

5-6 [DX Contest -- SSB](#)

April 2022

10 [Rookie Roundup – Phone](#)

May 2022

No planned contests

June 2022

11-13 [June VHF](#)

18 [Kid's Day](#)

25-26 [Field Day](#)

July 2022

9-10 [IARU HF World Championship](#)

August 2022

6-7 [222 MHz and Up Distance Contest](#)

21-22 [10 GHz & Up – Round 1](#)

21 [Rookie Roundup – RTTY](#)

September 2022

10-12 [September VHF](#)

17-18 [EME - 2.3 GHz & Up – Round 2](#)

17-18 [10 GHz & Up – Wknd 1](#)

October 2022

17-21 [School Club Roundup](#)

TBD [EME - 50 to 1296 MHz – Wknd 2](#)

November 2022

5-7 [Nov. Sweepstakes - CW](#)

19-21 [Nov. Sweepstakes - Phone](#)

12-13 [EME - 50 to 1296 MHz](#)

December 2022

2-4 [160 Meter](#)

10-11 [10 Meter](#)

18 [Rookie Roundup–CW](#)

January 2023

1 [Straight Key Night](#)

7 [Kid's Day](#)

7-8 [RTTY Roundup](#)

21-23 [January VHF Contest](#)

February 2023

13-17 [School Club Roundup](#)

18-19 [International DX – CW](#)

For more information:

<http://www.arrl.org/contest-calendar>

HAMFEST CALENDAR

[Please confirm the status of a Hamfest before making plans to attend]

03/04/2022 - 03/05/2022 BirmingHamfest

Location: Trussville, AL

Type: ARRL Hamfest

Sponsor: Birmingham Amateur Radio Club

Website: <http://birminghamfest.org>

03/05/2022 - Charlotte County Hamfest

Location: Punta Gorda, FL

Type: ARRL Hamfest

Sponsor: Peace River Radio Assoc.

Website: <http://PRRA.club>

03/18/2022 - 03/19/2022 The 52nd ANNUAL PARC Hamfest

Location: Fort Walton Beach, FL

Type: ARRL Hamfest

Sponsor: W4ZBB.Org welcomes you back to the panhandle for the 52nd Annual Show!

Website: <http://w4zbb.org/w4zbborg/index.php?page=Hamfest>

03/19/2022 - 47th Annual Martin County HamFest, ARRL Southern Florida Section Convention

Location: Stuart, FL

Type: ARRL Convention

Sponsor: Martin County Amateur Radio Association (MCARA)

Website: <http://stuarthamfest.com>

03/26/2022 - DeKalb County Amateur Radio Club Tailgate

Location: Fort Payne, AL

Type: ARRL Hamfest

Sponsor: DeKalb County Amateur Radio Club

Website: <http://w4dgh.org/tailgate.htm>

04/09/2022 - TARCfest

Location: Tampa, FL

Type: ARRL Hamfest

Sponsor: Tampa Amateur Radio Club

Website: <http://www.hamclub.org>

04/23/2022 - Calhoun Hamfest

Location: Resaca, GA

Type: ARRL Hamfest

Sponsor: Cherokee Capital Amateur Radio Society

Website: <http://www.k4woc.com>

04/23/2022 - Mobile Amateur Radio Club (MARC) Hamfest

Location: Mobile, AL

Type: ARRL Hamfest

Sponsor: Mobile Amateur Radio Club (MARC)

Website: <http://www.w4iax.com>

For more information: <http://www.arrl.org/hamfests-and-conventions-calendar>

When searching by division, remember some states adjacent to GA are in different divisions:

Southeastern: GA, AL, FL Delta: TN Roanoke: NC, SC



The

GARS Events Calendar for 2022		GARS Recurring Calendar
TechFest Winter Field Day Spring Technician HamCram Dog Show Fundraiser Georgia QSO Party North metro area Fox Hunt Memorial Day Parade ARC/KARC Hamfest Field Day Summer General HamCram Fall Technician HamCram JOTA Maker Faire Stone Mt. Hamfest Holiday Party	Cancelled for 2022 Jan 29-30 2022 March 26-27, 2022 March 30-April 3 2022 April 9-10 2022 April 2022 May 30 2022 June 4 2022 June 26-27 2022 July 2022 October 2022 October 16-17 2022 TBD November 6-7 2022 December 14 2022	<ul style="list-style-type: none"> 2nd Tuesday of the month at 7 pm (except December): Monthly Club Meeting (in-person location 690 Airport Rd, Lawrenceville, GA 30046) 3rd Tuesday of the month at 7 pm (except December): Monthly Workshop (in-person location 690 Airport Rd, Lawrenceville, GA 30046) 2nd Sunday of the Month at 2 pm GARS Ham Exam Session 690 Airport Rd Lawrenceville, GA 30046 Every Monday at 7:30 pm: GARS Want, Swap, Sell, and Information Net on the GARS 147.075 MHz repeater Every Monday at 8:30 pm: ARES Training on the GARS 147.075 MHz repeater Most Saturdays at 7:30 am : GARS Weekly Breakfast Cracker Barrel Restaurant 75 Celebration Dr., Suwanee, GA 30024

GARS CALENDAR FOR March 2022						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 7:00 PM GARS Exec Meeting (Online)	2	3	4	5 Breakfast at Cracker Barrel in Suwanee 7:30 AM
6	7 7:30 – 8:00 PM GARS 2M Net	8 7:00 PM GARS Meeting EAA 690 Hangar	9	10	11	12 Breakfast at Cracker Barrel in Suwanee 7:30 AM
13 GARS VE Exam Session EAA 690 Hangar 2:00 PM	14 7:30 – 8:00 PM GARS 2M Net	15 7:00 PM GARS Workshop EAA 690 Hangar	16	17	18	19 Breakfast at Cracker Barrel in Suwanee 7:30 AM
20	21 7:30 – 8:00 PM GARS 2M Net	22	23	24	25	26 Breakfast at Cracker Barrel in Suwanee 7:30 AM
27	28 7:30 – 8:00 PM GARS 2M Net	29	30	31		



The

Local Ham Radio Exams & Meetings

Local Ham Radio Exams

In order to find an exam session near you, please visit http://www.arrl.org/exam_sessions/. Contact the information in the listing for further information.

Local Ham Radio Meetings

In order to find a local Ham Radio Club meeting near you, please visit <http://www.arrl.org/find-a-club>. Contact the club for meeting information.

GARS Ham Radio Exams

Second Sunday of the month

Doors open at 1:45pm, exams start promptly by 2:00pm

GARS VE-Team

VEC: W5YI-VEC

EAA 690 Hangar

690 Airport Rd

Lawrenceville, GA 30046

GARS VE Team Leaders

E-mail: exams@gars.org

February 2022 Results

We had a very good session on Sunday, 2/13/2022. We had ten individuals test and everyone passed exams as follows:

- Six new Technician class,
- One new General class (passed Tech and General),
- One upgrade to General class,
- Two upgrades to Amateur Extra class.

Many thanks to the VE's who made this test session possible:

- Dave, W4DTR (CVE)
- Steve, WB2OGY
- Richard, KM4SWL
- Bob, K4CQO
- Frank, KV4SP

73,

Don, KK4NJM (Co-CVE)

GARS VE Website: <http://gars.org/exams> has location information and testing requirements.

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